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### *Topics for Discussion*

- *Review of 1999*
- *Economic Outlook and Industry Trends*
- *Aviation Perspectives*
- *Alternative Aviation Scenarios*


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### *Review of 1999*

- *Domestic and International Traffic*
- *Air Carrier Finances*
- *General Aviation Activity*
- *Demand for FAA Services*

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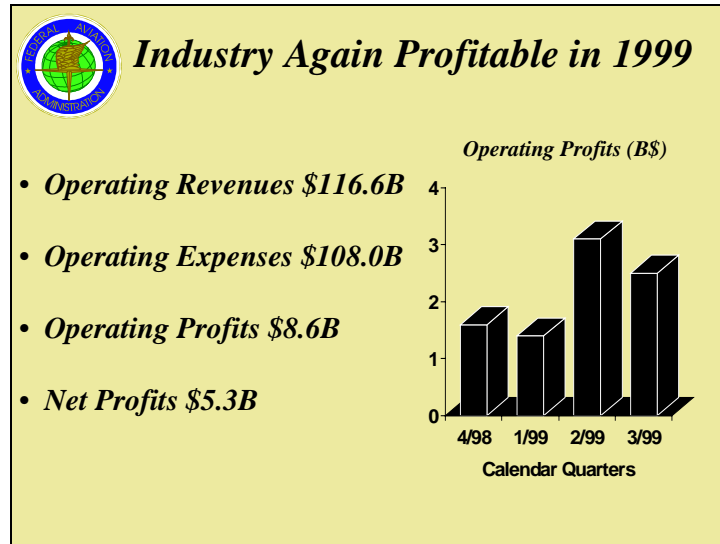
***RPMs Increase for 8th  
Consecutive Year***

- *Domestic + 4.8%*
- *International + 4.0%*
- *Regionals + 19.7%*

**In 1999 a strong economy and declining real yields (down 3.3%) pushed domestic RPMs up 4.8% and enplanements up 3.8%. The relatively large increase in capacity of 5.2% reduced the load factor to 69.8%--the first decline since 1993. In 1998, capacity increased only 0.7%, which resulted in an all-time high load factor of 70.1%.**

**World and U.S. economic growth in 1999 along with declining international real yields (down 6.4%) increased total U.S. air carrier international RPMs 4.0% to 169.7 million--more than three times the level reached in 1979, the first full year of deregulation. Atlantic up 6.7%, Latin America up 6.5%, and Asia/Pacific down 1.1%. U.S. carrier capacity in the Asia/Pacific region was reduced 8.6% over the past 2 years, with much of the capacity shifted to other international and domestic markets.**

**Regionals were up significantly due to the continuing transfer by large air carriers of short-and medium-haul routes to regional partners, the strong economy, and the introduction of regional jets.**




**Financial success of the industry was due to vibrant domestic and international economies, strong growth in traffic, and efficient utilization of capacity. Operating revenues were up 3.2%, while operating expenses increased 4.2%.**

**Nine out of the 10 major passenger carriers had operating and net profits in 1999. Operating profits for the 10 major passenger carriers were \$6.5B (76% of the industry total); net profits were \$4.4B.**

**For the decade of the 90s, U.S. air carriers' cumulative operating profits totaled \$34.8 billion--200 percent higher than the decade of the 80s.**

**During 1999, 5 major passenger carriers reduced their real unit costs (excluding fuel and oil). For all carriers reporting on Form-41, real unit costs (excluding fuel and oil) were down about 1%.**




### ***General Aviation Flying High***

- *Aircraft Shipments Up 13.7%*
- *Industry Billings Set a Record-- \$7.9 billion*
- *Hours Flown Up 6.0%*
- *Active Pilots Increase by Over 21,000*

**General aviation shipments have been continuously increasing since 1995, and in 1999 the level of shipments were more than double the rate achieved in 1990. Total billings have also been significantly increasing since 1995, and in 1999 reached an all time high of \$7.9 billion.**

**The export market has also been picking up. Aircraft export shipments increased to 562 units in 1999, while export billings increased 52.7% to \$2.5 billion.**

**The turnaround in the general aviation industry can be attributed to a number of factors such as the U.S. expansion which began in 1991, the passage of the General Aviation Revitalization Act in 1994, new product offerings, and the growth of fractional ownership. Today, approximately 1,600 companies or individuals have bought fractional shares in business jets.**



***Demand for FAA Services  
Continues to Grow***

- *Tower Operations + 4.4%*
- *Instrument Operations + 3.7%*
- *Center Activity + 3.4%*

**Total landings and takeoffs at FAA and contract towers increased 4.4% in 1999. The increase in tower counts was, in large part, due to the growth in both general aviation and military activity. General aviation landings and takeoffs increased 5.2% while military activity expanded 6.1%.**

**Instrument operations totaled 51.8 million in 1999, an increase of 3.7%. General aviation's activity expanded 4.9%, which was the the largest increase among all users of the system. At Air Route Traffic Control Centers, general aviation operations were up 1.9%.**

**The more sophisticated general aviation aircraft are growing at a faster rate than other segments of the general aviation fleet, and are expanding their use of FAA facilities.**

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## ***Economic Outlook and Industry Trends***





## ***Factors Affecting Demand for and Supply of Air Carrier Services***

### **Demand**

- ***Income***
- ***Fares***
- ***Tastes and Preferences***
- ***Demographics***

### **Supply**

- ***Competition***
- ***Restructuring***
- ***Efficiency***
- ***Fleet Size***



## ***Demand Side Factors***



### *A Decade of Economic Gains*

- *GDP Up 32.4%*
- *Net Worth of Typical U.S. Family Rose 20%*
- *Since 1993, Real Wages are Up 6.6%*
- *Unemployment Rate Lowest in 30 Years*

**The U.S. economic expansion, which started in April 1991, is now the longest in American history (107 months in February). Since 1991, GDP has increased 3.5% a year.**

**The Federal Reserve's Survey of Consumer Finances showed that the net worth of the typical family totaled \$71,600 in 1998, up from \$59,700 in 1989. The Federal Reserve's findings from the Survey suggest that the "wealth effect" has been a significant factor in influencing consumer spending.**

**The U.S. has had 5 consecutive years of real wage growth--the longest consecutive increase since the 1960s. Since 1993, real wages are up 6.6%.**

**The unemployment rate declined through the 1990s. In January it fell to 4.0%--the lowest level in three decades.**



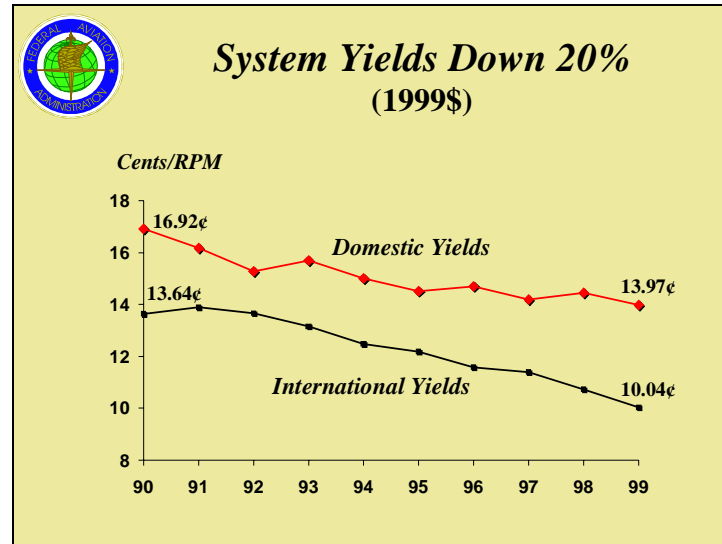
***Steady Economic Expansion  
With Stable Prices Through 2011***

- *U.S. GDP Up 2.8%*
- *Fuel Prices Up 2.1%*
- *Consumer Prices Up 2.6%*
- *World GDP Up 3.3%*

**Although the Office of Management and Budget and the major forecasting services expect the U.S. economy to slow during the next several years, the economic expansion now in its 10th year shows no signs of coming to an end soon.**

**Several factors explain why the economy does not follow the classical cyclical model: 1. globalization continues to add capacity and provide sufficient competition to prevent labor costs, capital costs, and prices from increasing; 2. new technology has increased productivity; 3. deregulation has made many industries competitive, and 4. restructuring has concentrated economic activity in larger firms that have benefited from economies of scale.**

**OMB is projecting the oil and gas index to increase 24% in 2000 and then decline 16% in 2001. Over the forecast period, real fuel prices fall about 0.5% a year. The reduction in OPEC production in March by 7% along with growing world demand has led to substantially higher oil prices. However, if the expected slowdown in the U.S. economy occurs during the next several years, oil production from non-OPEC countries increase, and one or more of the OPEC countries break ranks and increase production beyond OPEC quotas, or if OPEC decides to increase production, which is likely, we can expect slower growth of nominal fuel prices during the forecast period.**

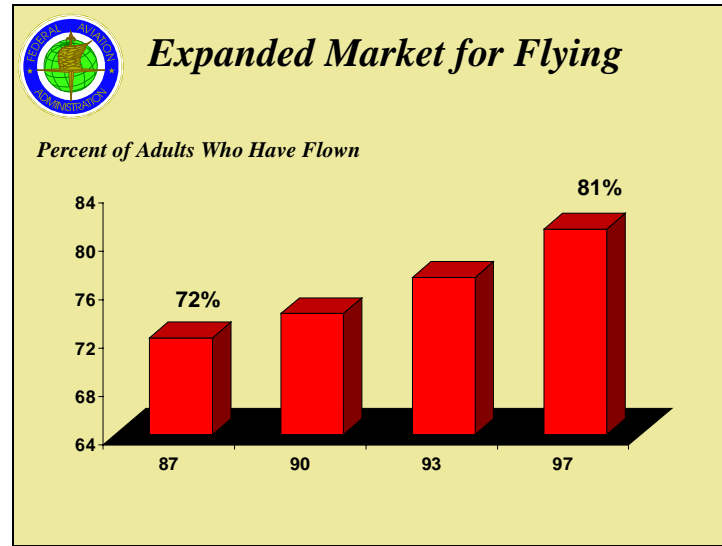


Since 1990, domestic yields, adjusted for inflation, fell over 17%, while international yields declined 26%.

During the decade, carriers accelerated their restructuring efforts by realigning routes, withdrawing from unprofitable markets, seeking work rule changes and wage concessions from employees, buying more efficient aircraft, reducing costs, and increasing productivity.

During the 1990s the growth of new-entrant, low-cost carriers, and the expansion of Southwest intensified competition in many markets.

Competition also increased on international routes because of expanding global alliances, open-skies agreements, and liberalized bilateral agreements. Since 1996, yields in the Atlantic and Latin American markets declined about 12%.



**Declining real fares of over 20% during the 90s and strong U.S. and world economies have created a mass market for travel.**

**Based on ATA surveys, the number of adults who have flown increased 9 percentage points between 1987 and 1997--growing from 72% to 81%.**


**The percentage of leisure trips taken increased from 52% in 1987 to 54% in 1997.**

**The fraction of the population over 55 has been growing along with the number of people retiring. Many individuals in this age group grew up in an era where traveling by air was almost routine. This segment of the population are increasing their use of air travel for visiting family and friends and vacations.**

**Young adults who have been raised in households where air transportation has generally been the preferred mode of travel would probably be inclined to fly more frequently.**



## ***Supply Side Factors***



### ***Low-Cost Carrier Revolution***

- *New Entrants*
- *Southwest Effect*
- *Two-Tier Carriers*

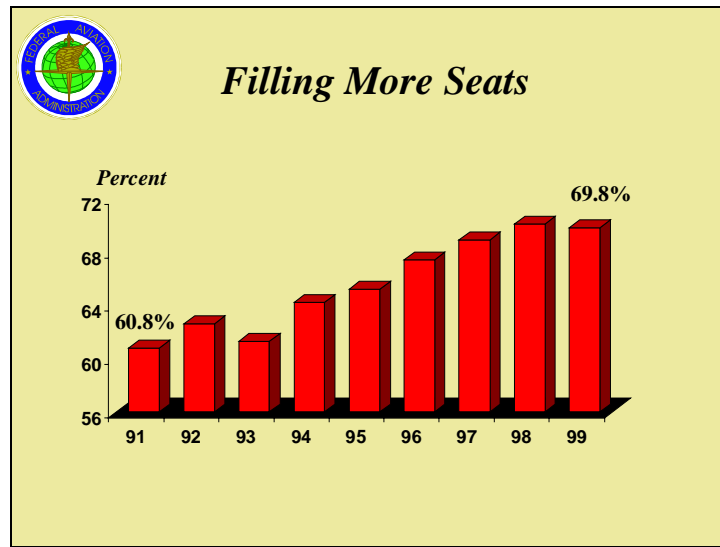
The second wave of expansion of low-cost, low-fare carriers during the 90s is having a major effect on efficiency, competition, the consumer, and industry structure. Today, about one in five passenger trips is on an airline that may be considered a low-fare operator. The monetary benefits for the consumer have been significant. A study by DOT showed that low-fare service saves consumers about \$6.3 billion annually. Although expansion of these carriers slowed following the crash of ValuJet flight in 1996, entry activity appears to be rebounding.

Southwest Airlines with its highly efficient low-cost operation has successfully pursued a low-fare strategy in many secondary airport-pair markets. This strategy has played an important role in pushing down average fares and accelerating growth in traffic. In 160 short-haul markets that Southwest entered for the first time between 1990 and 1998, annual passenger traffic increased by more than 174% and real yields fell by 54%. Southwest now accounts for about 75% of the passenger traffic carried on low-fare airlines.

Southwest has provided the momentum for some major carriers to start low-cost, low-fare divisions such as US Airways MetroJet, Delta Express, and Shuttle by United. These second tier carriers have been put into markets as competitors for Southwest and other startup airlines.



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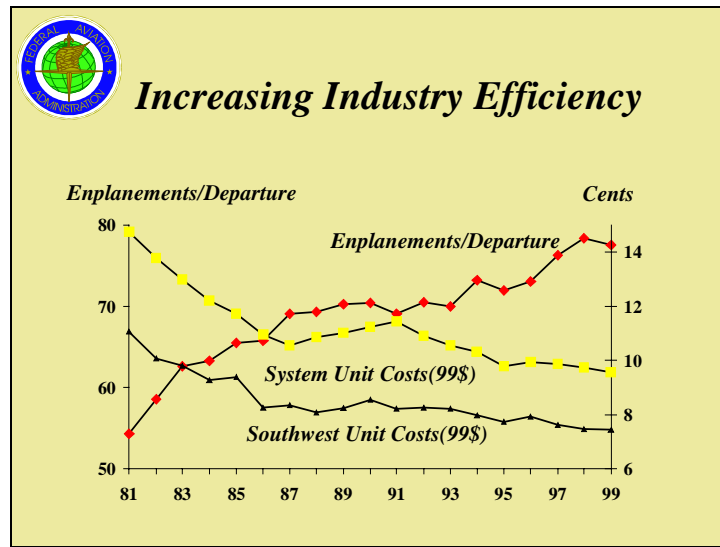
During the decade, the industry has improved its ability to rapidly adjust capacity in both domestic and international markets to meet changing levels of demand. Clearly, these capacity adjustments have significantly improved industry profitability.

Since 1991, the domestic load factor increased from 60.8% to 69.8%, up 9.0 percentage points. The largest improvements occurred from 1993 through 1999, when the load factor increased 8.5 percentage points.

The international load factor increased from 67.0% in 1991 to 73.9% in 1999.

Among the three international regions the Atlantic had the largest increase, with the average load factor expanding from 69.5% in 1991 to 77.5% in 1999.

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Since 1981, industry efficiency has been increasing while operating costs per available seat mile (unit costs), adjusted for inflation, has been declining.

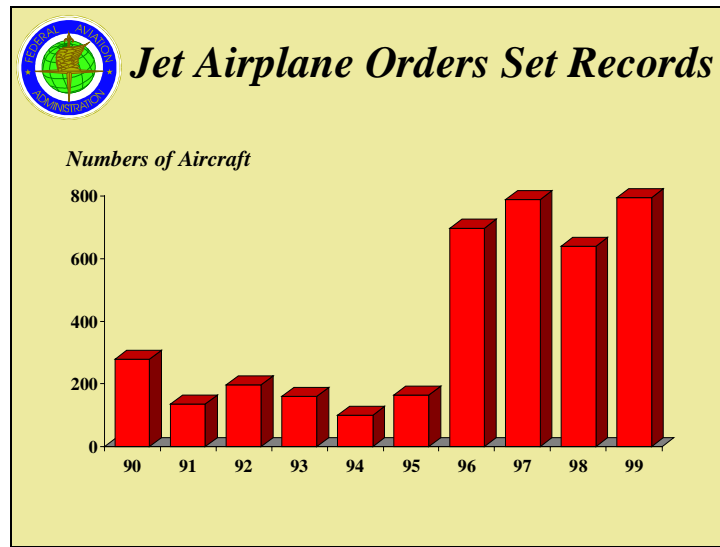
Industry efficiency, measured by enplanements/departure, increased 2.0% a year since 1981, while unit costs declined 2.4%.

In 1999, air carrier system units costs were 9.55 cents, while Southwest's--one of the most efficient carriers in the industry--was 7.44 cents.

In 1990 system unit costs were 32% above Southwest's, in 1999 it was 28% above.

In competitive markets the survival of relatively inefficient firms would dictate the reduction of marginal costs to those of the most efficient operators.

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**In 1999 U.S. customers ordered 795 aircraft--a record for the industry.**

**Total orders placed during the four year period 1996 through 1999 (2, 919) is greater than the number of orders placed during the ten year period, 1985 through 1995.**

**In 1999 manufacturers delivered 519 jet aircraft to U.S. customers-- the largest number of deliveries on record.**

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### ***Redefining Regional Carriers***

- *Introduction of Regional Jets*
- *Growing Trip Length*
- *Increasing Aircraft Size*
- *Increasing Load Factors*

Since 1990, regional air carrier RPMs have increased over 12% a year. A large share of the growth has come from the transfer of routes from from large code-sharing partners.

The introduction of new regional jets will redefine the industry. The regional jets will be larger than the traditional turboprops, and will be capable of serving long-haul markets and attracting more passengers. The regional jets will give the industry the ability to create its own markets and to compete directly with the larger air carriers.

Over the decade, the average trip length for regionals increased close to 50%, expanding from 180 miles to 260 miles.

During the 90s, the average size of regional aircraft increased by about 40%, growing from 26.5 seats to 36 seats.

The regional carriers have also improved their management of capacity. The average load factor for regionals increased from 47.5% in 1990 to 57.6% in 1999.

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### *Industry Forecast Assumptions*

- *Intense Competition*
- *Growing Air carrier and Regional Fleets*
- *Increasing Load Factors*
- *Increasing Productivity*
- *Lower Real Yields*

**Competition is alive and well in the industry.** After a two-year lull following the ValuJet accident, applications by carriers for certification are again flowing into DOT. These new carriers generally have lower cost structures than the established carriers and offer relatively lower fares on the new markets they enter. In February, the new low-fare carrier JetBlue entered the East Coast market and had an immediate impact on competition. American Eagle and US Airways both matched JetBlue fares on some of their competing routes. By the end of the year, the airline plans to have low-fare high frequency service to 11 East Coast cities with a fleet of 10 new A320s. The airline is considering expanding service to a total of 44 cities. Also ProAir, another low-fare carrier operating in Detroit, received more funding and Sun Country is innovating with business fares. In February, Northwest airlines announced a new pricing policy for business travelers. The carrier will offer business travelers a 40% discount for tickets purchased 10 days in advance.

During the last seven years, the Administration has achieved 77 new and expanded bilateral agreements. Based on DOT studies, these agreements have been responsible for declining fares. We expect this trend to continue throughout the forecast period.

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### *Industry Forecast Assumptions*

- *Intense Competition*
- *Growing Air Carrier and Regional Fleets*
- *Increasing Load Factors*
- *Increasing Productivity*
- *Lower Real Yields*

**Ample Capacity** is expected to be available to meet growing demand. The large air carrier passenger fleet is forecast to increase 3.3% a year through the forecast period, while the regional jet fleet is projected to increase from 343 aircraft in 1999 to 1,546 aircraft in 2011--an increase of over 1,200 aircraft.

DOT is assessing the pros and cons of the following policies to increase competition: 1). modifying cabotage constraints ( prohibits foreign airlines from carrying commercial passengers between cities in another nation's territory); modifying seventh freedom rights (prohibits airlines from establishing a base in another nation and servicing a third country); and increasing foreign investment in U.S. carriers from the current 25.%.

The system load factor is expected to decline through 2002 due to capacity increases as new aircraft enter the fleet and the U.S. economy slows. As the economy picks up and carriers adjust capacity, the load factor again begins to increase through 2006 peaking at about 71%. The load factor remains at this level through the end of the forecast period as demand and supply reach equilibrium.

Airlines will increase productivity by using more efficient aircraft, using automation for distributing and pricing seats, expanding the use of computers for ticketing and marketing, and investing in new technologies.

In developing the demand forecasts it was assumed that industry productivity will continue to increase and reduce real yields 1.3% a year-- a conservative estimate which is about have the annual rate reduction in yields achieved in the 90s.

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### *Supply Side Issues*

- *Fuel Prices*
- *Landside/Airside Capacity and Delays*
- *Protecting the Environment*
  - Quieter Aircraft*
  - Reducing Emissions*

In December, air carrier fuel prices were up 43% over December 1998. OMB is projecting oil and gas prices to increase 24% in 2000 and then decline 16% in 2001. Over the forecast period, real fuel prices fall about 0.5% a year.

The reduction in OPEC production in March by 7% along with growing world demand has led to substantially higher oil prices. However, if the expected slowdown in the U.S. economy occurs during the next several years, oil production from non-OPEC countries increase, and one or more of the OPEC countries break ranks and increase production beyond OPEC quotas, or if OPEC decides to increase production, which is likely, we can expect slower growth of nominal fuel prices during the forecast period. During the past two weeks, some OPEC members indicated that they want stability in oil prices and do not want to jeopardize world economic growth.

Delays are growing nationwide along with traffic growth. DOT recently studied 2,115 domestic routes to and from the 28 busiest American airports and found that the gate-to-gate time has grown longer on 1,544 routes or 73%. However, the forecasts that I'll be presenting of the demand for air carrier and FAA services are "unconstrained", i.e., they are only dependent upon forecasts of macro economic activity and are not influenced by the adequacy of airside and landside capacity. In fact, the purpose of the forecasts is to estimate capacity that will be needed to meet demand while reducing the cost of delays.

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### *Supply Side Issues*

- *Fuel Prices*
- *Landside/Airside Capacity and Delays*
- *Protecting the Environment*
  - Quieter Aircraft*
  - Reducing Emissions*

Expanding investments in ATC modernization and airports along with free flight should provide adequate capacity to meet future demand. Air carriers may also adjust their operating procedures to reduce and control delays by moving connecting traffic out of the large congested hubs, and providing more point-to-point service.

ICAO is considering a number of options for reducing aircraft noise levels between 2006 and 2013. Depending upon the stringency of the requirements, 5% to 90% of the current fleet of aircraft could be effected.

The options being considered for reducing emissions are: 1. emissions trading; 2. levies and charges; and 3. voluntary agreements. A decision on courses of action is expected to be made in 2001.

Clearly, imposing environmental standards on air carriers will increase their operating costs and reduce the growth of aviation.

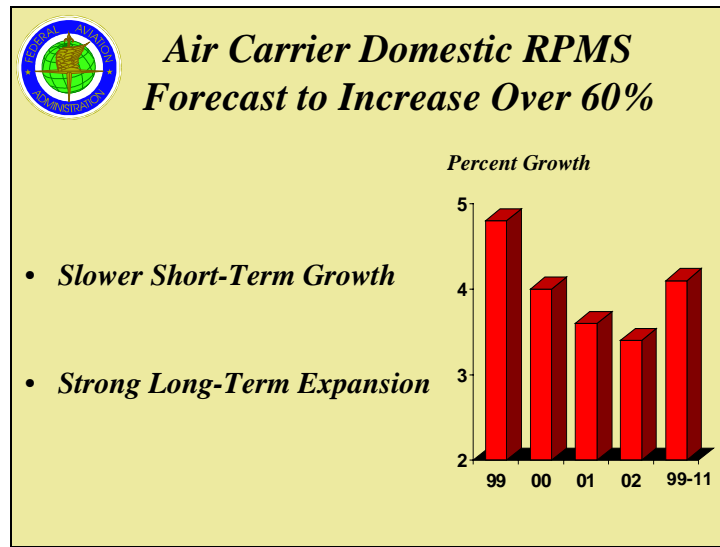


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### *Aviation Perspectives*

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Commercial air carrier domestic RPMs are forecast to increase 4.0% in 2000, and 3.6% in 2001 and 3.4% in 2002 and 2003. The slower growth through this period is based on OMB's expected slower growth for the economy. Traffic is forecast to gradually increase over the balance of the forecast period as the economy returns to its long-term growth path.

For the period 1999 through 2011, domestic RPMs are expected to increase 4.1% a year (OMB projects GDP to increase 2.8% a year through the period).

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**Traffic in the international markets is projected to increase at rates above the domestic market.**

**Over the 12-year forecast period, total international passengers to and from the U.S. on both U.S. and foreign flag carriers are projected to increase over 80%, expanding from 132 million in 1999 to over 230 million in 2011.**

**The Atlantic market is expected to increase 4.3% annually over the forecast period, while the Latin American market is forecast to increase 6.1%.**

**Slower short-term growth is expected in the Asian market as the region begins to recover from the economic and financial problems which began in 1997. Over the 12-year forecast period, total passengers to and from the U.S. are forecast to increase 6.0% a year.**

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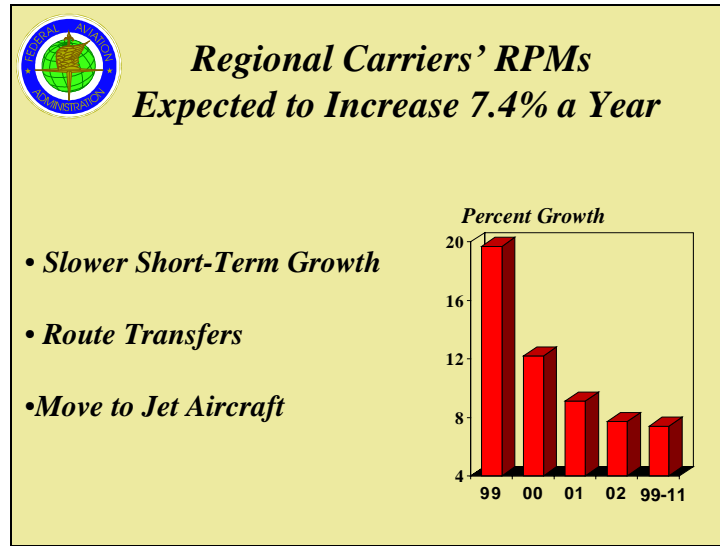
***Air Cargo RTMS Double Over  
Forecast Period***

- *Freight/Express Up 6.1% a Year*
- *Domestic Freight/Express Up 5.4%*
- *International Freight/Express Up 6.7%*

**Total RTMs (freight/express and mail) are forecast to increase from 28.0 billion in 1999 to over 55.6 billion in 2011--up 5.9% a year.**

**The relatively high growth in international freight/express RTMs is based upon expected strong economic growth in Latin America and the Asia/Pacific regions. The all-cargo carriers have increased their share of international freight/express RTMs from 50.5% in 1991 to 53.6% in 1999. This trend is expected to continue throughout the forecast period, with all-cargo carriers share of international freight/express RTMs increasing to 64.4%.**

**To accommodate growth in air cargo, the cargo jet aircraft fleet is forecast to increase from 1,013 aircraft in 1999 to 1,631 aircraft in 2011.**




**Regional carrier RPMs increased 19.7% in 1999. Over the forecast period, RPMs are projected to more than double, expanding from 18.8 billion in 1999 to 44.6 billion in 2011.**

**The regional jet fleet is forecast to increase from 343 in 1999 to 1,546 in 2011. Increased use of regional jets is expected to lead to expanded transfer of routes of the large commercial air carriers to their regional partners.**

**Regional jets with ranges up to 1,000 miles will open up growth opportunities in non-traditional markets.**

**Average aircraft size, trip length, and load factors are expected to show significant increases over the forecast period.**




### ***Recovery of General Aviation Expected to Continue***

- *Hours Flown Up 2.2% a Year*
- *Fleet Increases by Over 24,000 Aircraft*
- *Active Pilots Up 2.1%*

**In 1999 aircraft shipments increased 13.7%, while the total number of active general aviation and air taxi aircraft increased by 1,820.**

**Forecast growth in hours flown by general aviation of 2.2% a year is due to the expansion of the fleet over the forecast period by 24,465 aircraft and increased aircraft utilization. The turboprop/turbojet fleet is expected to show the largest increase over the 12-year forecast period, expanding 3.2% a year.**

**Largest growth in hours is expected in the turboprop/turbojet market--up 5.3% a year.**



***Demand for FAA Services  
Steadily Increases Through 2011***

- *Tower Operations Up 28%*
- *Instrument Operations UP 31%*
- *ARTCC Activity Up 33%*

**Operations at combined FAA and contract towers are projected to increase 2.0% a year over the 12-year forecast period. Air carrier activity is expected to show the fastest growth, increasing 2.8% per annum.**

**Growth in instrument operations slows from 3.7% in 1999 to 2.1% in 2000 due to the expected slowing of the economy. Instrument operations over the forecast period expand 2.2% a year.**

**General aviation instrument operations, which increased only 1.0% a year during the 90s, are expected to increase 1.9% a year over the forecast period, primarily due to the relatively large growth in the fleet of the more sophisticated general aviation aircraft.**

**Growth in total IFR aircraft handled slows from 3.4% in 1999 to 2.2% in 2000. Over the forecast period IFR aircraft handled increases 2.4% a year.**

**General aviation aircraft handled at ARTCCs, which increased 1.3% a year during the 90s, is forecast to expand 2.0 percent a year through 2011.**



## ***Forecast Summary***

- ***Strong World Economic Growth***
- ***Expanding Capacity and Increasing Competition***
- ***Increasing Productivity and Falling Fares***
- ***Growing Air Travel Demand***
- ***Escalating Demand for FAA Services***





### *Aviation Scenarios of the Future*

- *Global Prosperity*
- *Western Hemisphere*
- *Aging America*
- *Global Climate Change*

The forecasts I presented represent baseline projections developed from current trends and anticipated changes. These projections may be considered most likely events. To provide information in planning for contingencies, FAA and aerospace experts developed four economic scenarios that could also occur sometime during the 12-year forecast period. These scenarios range from vibrant economic growth to economic stagnation. Each of these scenarios were evaluated for their possible affects on the aviation industry. The four scenarios are: 1. Global Prosperity; 2. Western Hemisphere; 3. Aging America; and 4. Global Climate Change. An in-depth discussion of these scenarios and their consequences are presented in our aerospace forecast publication that you received this morning.

**In brief:**

**1. The Global Prosperity Scenario assumes strong world growth, increasing globalization, and a declining role for Governments. Commercial air carriers and air cargo prosper along with aircraft manufacturers. General aviation, particularly business aviation, air taxis, and personal air transportation, will enjoy boom times. Air traffic control is privatized in this scenario.**

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### *Aviation Scenarios of the Future*

- *Global Prosperity*
- *Western Hemisphere*
- *Aging America*
- *Global Climate Change*

**2. The Western Hemisphere Scenario also assumes strong U.S. economic growth, but decreasing globalization, and an activist role for Governments. Commercial air carriers and air cargo are also expected to prosper along with the manufactures and general aviation.**

**3. The Aging America Scenario has weak U.S. economic growth, decreasing globalization, and an activist role for Governments. Business travel is expected to be down as domestic corporations economize. However, leisure travel by the elderly is expected to boost the demand for aviation services. Some major airlines could be trouble unless they reduce their costs, and the number of U.S. carriers may shrink. General aviation, especially leisure flying, is greatly diminished in this scenario.**

**4. The Global Climate Change Scenario has weak U.S. economic growth, increasing globalization, and an increasing role for Governments. Commercial aviation suffers in this world. Load factors and fares are high, and schedule frequencies are low, making air travel unpleasant yet considered a luxury. Increasing taxes for avgas and slowing economic growth shrink general aviation activity.**